

1) A cannonball is fired straight up. At three seconds, its velocity is 29 feet per second. At nine seconds, its position is 129 feet.

- a) What are the velocity and position functions?
- b) What are the cannonball's initial position and velocity?
- c) When does the cannonball reach its maximum height?
- d) What is the cannonball's maximum height?
- e) When does it hit the road and at what velocity?

2) A penny is tossed into a river. It has a velocity of -40 feet per second at one second. Its position is 37 feet at 0.5 seconds.

- a) What are the velocity and position functions?
- b) When does the penny hit the water and at what velocity?
- c) What are the position and velocity of the penny at 1.1 seconds?

- 3) An object moves horizontally with an acceleration of $a(t) = 2t - 6$. At 4 seconds, its velocity is -2 feet per second and the position is 5 feet at 3 seconds.
- a) What are the position and velocity functions?
 - b) What are the values of the displacement and the distance traveled by the particle for the interval of $0 \leq t \leq 6$ seconds?
 - c) What is the position when the velocity is 8.5 feet per second?

- 4) What are the displacement and the distance traveled by the cannonball in problem #1?